# THERE'S A STORM BREWIN'

## (HIPPI-ST OVER ATM)

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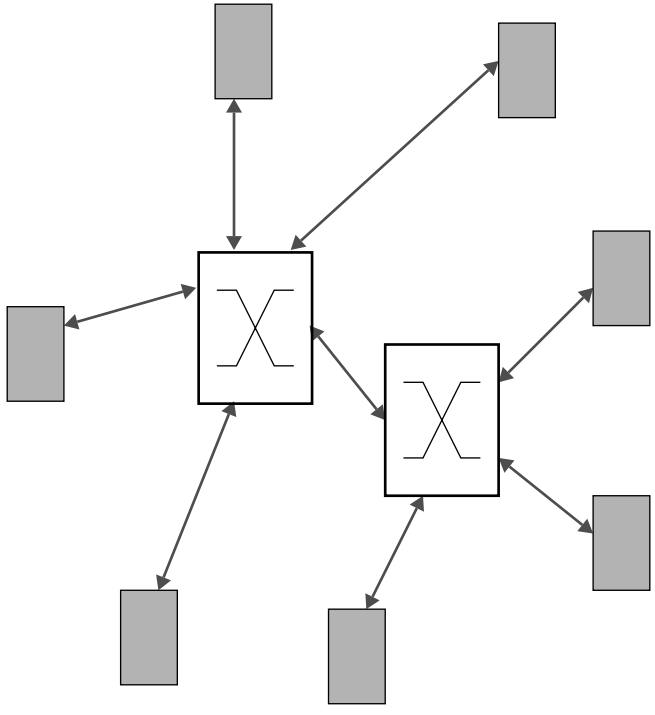
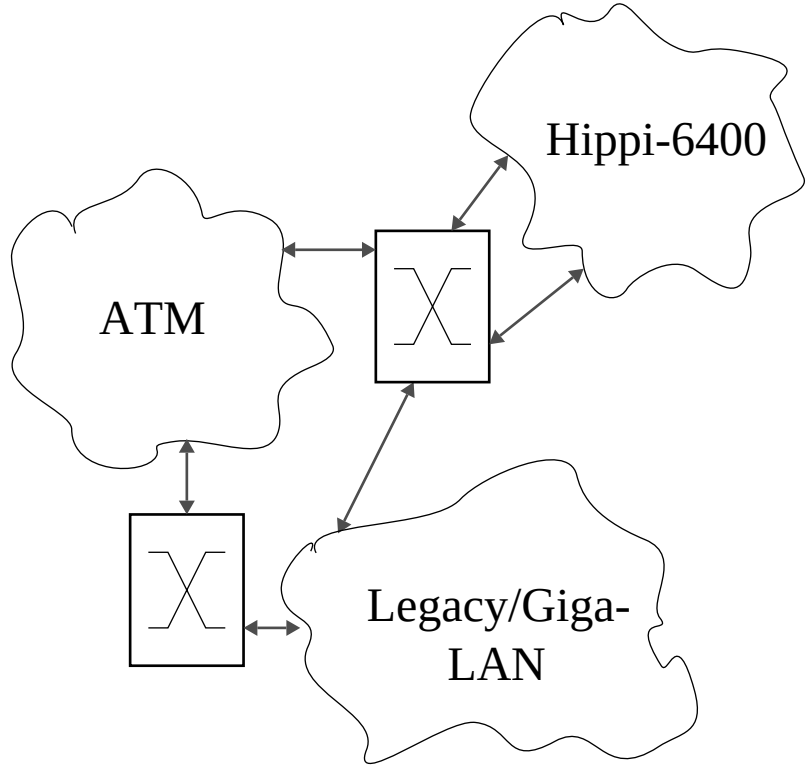
# MOTIVATION

- **Another interoperability option for ST**
  - **Heterogeneous networks**
  - **More connectivity options: e.g. to platforms without HIPPI-6400 support**
- **A high-performance transport that fits ATM**
  - **Full-duplex, connection oriented, virtual circuits, QOS support**
  - **Flow-control & packet integrity (CRC-32) provided by network**
  - **IEEE 802 LAN support & software infrastructure**
- **Good support for physical distribution**
  - **e.g. Geographically distributed clusters**
  - **Public transmission line infrastructure: SONET, ATM**
- **Underlying bandwidth technology improving; striping a viable option**

# NETWORK CONFIGURATIONS



**Homogeneous ATM Network**




**IEEE-802 LAN Inter-network**

# ST AND NETWORK ADDRESSES

- Hippi-ST is silent on network addresses used for connection establishment.
- There is—it seems to me—an assumption that MAC addressed, LLC/SNAP encapsulated packets will be exchanged and . . .
- . . . that some upper-level protocol will provide these addresses to the ST layer.

# STORM: NETWORK ADDRESSES

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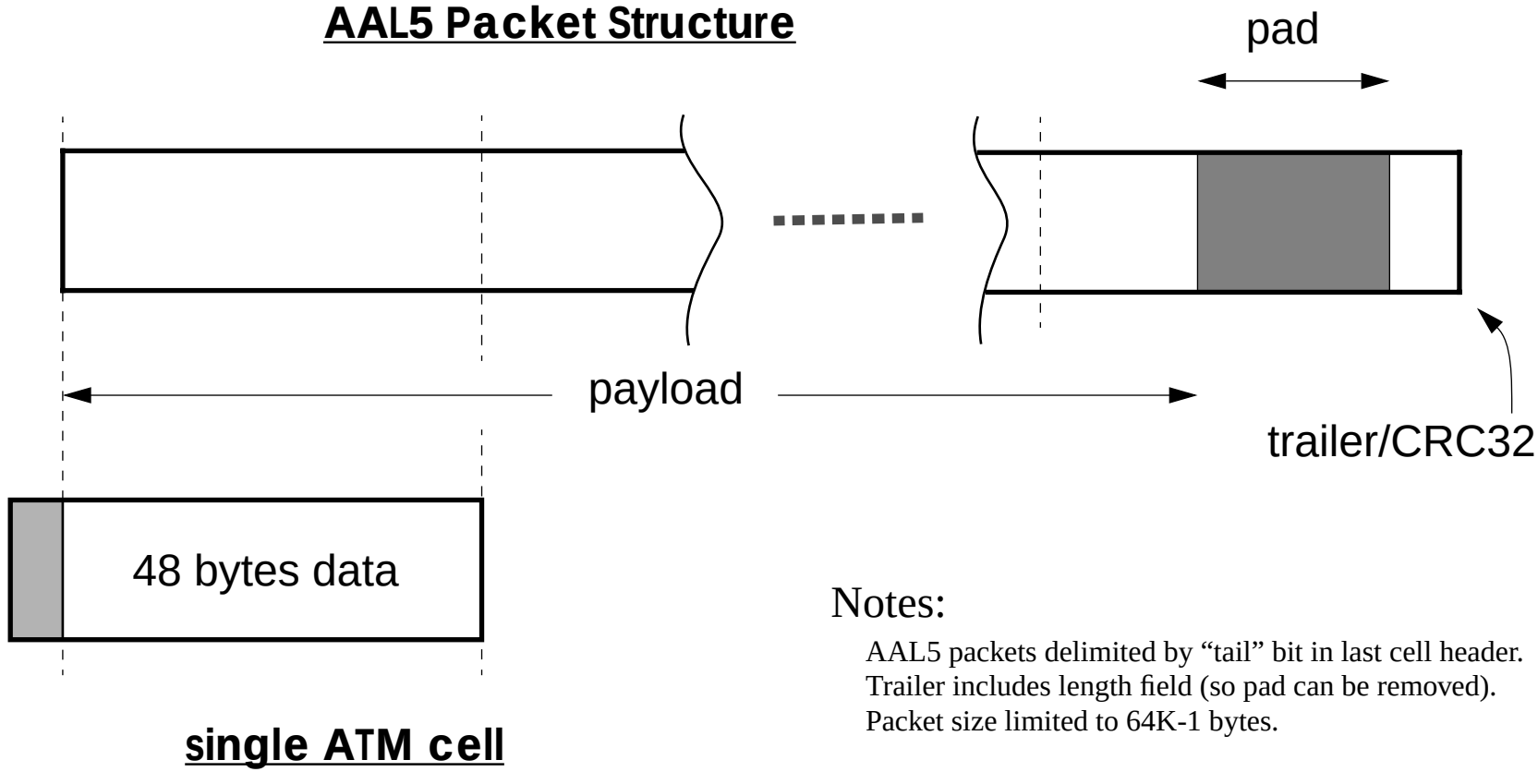
- **For a homogeneous ATM network, there are advantages in using ATM addresses:**
  - **MAC addresses provide no functionality.**
  - **No protocol restrictions for establishing multiple VC's between endpoints.**
  - **Packet reception on a given VC is a reasonable hardware/adapter event, while de-multiplexing by examining packet contents is more burdensome.**
- **An inter-network/virtual LAN environment fits well with the MAC addressing model:**
  - **Software infrastructure—LAN emulation—in place.**
  - **LAN emulation standards evolving to provide for multiple ATM connections (with specific QOS parameters) between endpoints.**
  - **Compatible with HIPPI-6400-PH packet addressing and encapsulation.**
  - **Retaining MAC/LCC/SNAP encapsulation for homogeneous networks does not generate that much overhead, and eliminates a special case.**

# STORM: NETWORK ADDRESSES CON'T

- **Conclusion: Use MAC/LLC/SNAP addressing and encapsulation structure from HIPPI-6400-PH/ST.**
  - **Additional LAN emulation header (2 bytes) required while traversing ATM portion of inter-network. The mechanism to add and remove this header when crossing network frontiers is well understood.**
  - **Since packet header (for ST) must be examined prior to transfer of payload to memory in any event, "extra" encapsulation of MAC/LLC/SNAP and header-based de-multiplexing is not a burden on implementation.**
  - **Use of packet reception on VC's to de-mux ST packets can still be used when standards evolve.**

# ATM/AAL5 PACKET ENCAPSULATION




Notes:

AAL5 packets delimited by “tail” bit in last cell header.
Trailer includes length field (so pad can be removed).
Packet size limited to 64K-1 bytes.

# STORM: ENCAPSULATION